ARMATURA

ARCHITECTURAL AND ENGINEERING SYSTEM SPECIFICATIONS

DESIGNED & ENGINEERED IN THE USA ARMATURA

Vanguard Series

VG10CKQ

All-Weather Outdoor Multi-Tech Smart Reader

Bluetooth NFC OSDP IP66 IK07 QR CODE



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Date: 9 Apr 2025

Version: 1.1

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SECTION 1 GENERAL SPECIFICATIONS

1. PURPOSE

The purpose of this architectural and engineering specifications (A&E) document is to provide guidance for the design, implementation, and installation of the Vanguard Series, VG10CKQ, an all-weather outdoor multi-tech smart reader for advanced security management.

2. GOALS AND OBJECTIVES

The VG10CKQ, an all-weather outdoor multi-tech smart reader's A&E document aims to achieve the following goals and objectives:

- Provide a highly secure and reliable multi-tech smart reader with RFID card, QR code and Bluetooth technology.
- Ensure scalability and flexibility to accommodate varying user and system requirements.
- Meet or exceed relevant industry standards and regulations.
- Provide a clear and detailed specification for the design, supply, installation, and commissioning of the terminal.

3. KEY FEATURES AND REQUIREMENTS

The VG10CKQ, an all-weather outdoor multi-tech smart reader shall have the following key features and requirements:

- A compact RFID reader with touch keypad and QR Code scanner options. Support for over 100 RFID card types, and 125kHz, 13.56MHz and 2.4GHz frequency credentials.

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- It also supports optional modules with more than 10 secure RFID protocols. And supports mobile NFC (Android operating system only), and Bluetooth (low energy), seamlessly integrate with Armatura mobile credentials via Bluetooth.
- Uses OSDP (v2.2) to secure channel) over RS-485 communication, offering protection against interleaving and replay attacks through AES-128 end-to-end encryption for advanced security.
- Utilizes EAL6+ certified crypto chips for advanced data protection.
- A customizable LED lights with an extensive range of colors and display styles. The LEDs are programmable by Armatura Connect mobile app.
- Fully operate in all weather environments as it reached IK07 vandal-proof and IP66 water & dustproof protection.
- This product complies with IEC EN/BS EN 60839 Grade 4 standards, meeting the highest requirements for security and performance in intrusion and access control systems.

4. EXISTING STANDARDS AND REGULATIONS

The VG10CKQ multi-tech smart reader shall comply with the following standards and regulations:

- FCC Standards
- CE Standards
- RoHS 3.0 Standards
- IEC EN/ BS EN 60839 Grade 4
- WEEE
- UL294 (Coming Soon)

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5. DESIGN AND IMPLEMENTATION CONSTRAINTS

The design and implementation of the VG10CKQ multi-tech smart reader shall adhere to the following constraints:

- The design shall be scalable and flexible to accommodate varying user and system requirements.
- The implementation shall be done by trained installers who have been certified by the manufacturer.
- The implementation shall comply with relevant standards and regulations.
- The implementation shall ensure high-level cybersecurity to protect against unauthorized access or data breaches.

6. SUBMITTALS

The following submittals shall be provided by the manufacturer.

- Product data sheets
- Installation instructions
- Operation manuals
- Test reports

7. QUALIFICATIONS

The manufacturer shall have the following qualifications:

- ISO27701, ISO27001, ISO9001, ISO14001 certifications.
- Minimum of 5 years' experience in producing access control equipment.

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8. WARRANTY

The manufacturer shall provide a limited 36-month warranty for the VG10CKQ, all weather outdoor multi-tech smart reader to be free of defects in material and workmanship.

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SECTION 2 TECHNICAL SPECIFICATIONS

1. KEY FEATURES AND REQUIREMENTS

1.1 Key Features

i. Versatile multi-tech RFID solution that supports over 100 RFID card types, Bluetooth (Low Energy), and QR code for authentication, making it suitable for various installation environments.

ii. Support over 100 RFID card types with optional modules offering more than 10 secure RFID protocols. It seamlessly integrates Armatura mobile credentials via Bluetooth, catering to a wide range of user needs and providing flexibility for multi-card scenarios.

iii. Features an embedded touch keypad with 12 keys, enabling password authentication and allowing users to select their preferred authentication method for added flexibility.

iv. High mobile credential capabilities with the Armatura ID mobile app. A seamless user experience on both iOS and Android devices. Users can unlock doors by presenting their smartphones to the reader or scanning a QR code. For enhanced security, users can use the smartphone's Face and TouchID capabilities. With support for NFC (Android OS only) and Bluetooth.

v. Supports 125 kHz, 13.56 MHz (ISO14443 types A & B, ISO15693) and 2.4GHz Bluetooth frequency credentials. Supports various card types including EM, IC Card, HID Prox, HID iCLASS, DESFire and FeliCa.

vi. The reading distance for 125 kHz and 13.56 MHz (ISO14443 types A & B, ISO15693) operating frequencies cap at 2.3" (58.42mm), varying based on environment and transponder.

vii. This product complies with IEC EN/BS EN 60839 Grade 4 standards, meeting the highest requirements for security and performance in intrusion and access control systems.

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viii. The reading distance for the Bluetooth with a smartphone reach a maximum of 393.7” (9.99m) and it can be configured on each reader.

ix. Features a QR code scanner. The QR code scanning pattern provides the area image with 640*480 pixel array. The QR code scanning angle at 68 degrees (horizontal) and 51 degrees (vertical).

x. The device is compatible with one-dimensional code including Code 128, Code 39, Codabar, Interleaved 2 of 5, ITF-6, ITF-14, ISBN, Code 93, UCC/EAN-128, GS1 Databar, Matrix 2 of 5, Code 11, Industrial 2 of 5, Standard 2 of 5, Plessey, MSI-Plessey. It is also compatible with two-dimensional code: QR code and Micro QR.

xi. The QR code scanning performance range in the narrow width consists of 9mil /15mil /20 mil. While the QR code scanning range in the depth of field encompasses 1.5” to 2.5” (40mm to 65mm) / 0.3” to 4.3” (10mm to 110mm) / 0.5” to 4.5” (1.5mm to 115mm). Please note that the QR code scanning was rigorously tested in a lab with 250 Lux luminance.

xii. The Code 128 Barcode scanning range in narrow width encompasses 6mil/ 9mil/ 15mil/ 20mil. While the Code 128 Barcode scanning range in the depth of field comprises of 1.7” to 3.7” (45mm to 95mm)/ 0.9”to 5.1”(25mm to 130mm)/ 0.9” to 6.1”(25mm to 155mm)/ 1.7” to 5.5”(45mm to 140mm). Please note that the QR code scanning was rigorously tested in a lab with 250 Lux luminance.

xiii. For mobile communication via NFC (Android OS only) and Bluetooth, the reader adheres to AES-256 encryption standards, enhancing data security.

xiv. Equipped with Wiegand interfaces for communication between controller and reader.

xv. Ensure secure communication with the support of OSDP (v2.2) between controller and reader. Secure data storage by employing EAL6+ certified crypto chip.

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xvi. Uses AES128 end-to-end encryption to ensure all communication between controller and reader are fully secure.

xvii. It provides comprehensive protection against a range of cyber threats, including SPA, DPA, EMA, and DEMA attacks that safeguards all communication and client data.

xviii. The Armatura Connect mobile app offers customizable programmed LED lights with RBG color and a variety of display styles, providing users with the flexibility to adapt the lighting to suit different scenarios.

xix. It is equipped with an internal buzzer with adjustable intensity, and it can be configured through the Armatura Connect mobile application.

xx. A magnetic tamper detection system through the tamper switch.

xxi. Compatible with variable input voltage, from 12 VDC to 24 VDC.

xxii. Reached IP66 protection rating, providing waterproof and dustproof, fully operate in extreme weather conditions, including cold winters, heavy rains, and dry/hot summers.

xxiii. Reached IK07 certification for vandal-proof structure.

xxiv. Operating and storage temperature ranges from -4°F to 122°F(-20°C to 50°C).

xxv. The dimension is 4.78" in width, 1.77" in height and 0.96" in depth, which is equivalent to 121.5mm in width, 45mm in height and 24.5mm in depth.

xxvi. It is compliant with CE, FCC, RoHS 3.0, WEEE and UL294 (coming soon) standards.

xxvii. Ideal for mullion-mount door installations or any flat surface mounting.

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TECHNICAL SPECIFICATIONS

Dimensions



Specifications

Internal Number	VG10CKQ	
Operating Frequency / Standards	125 kHz 13.56 MHz: ISO14443 types A & B, ISO15693 2.4 GHz Bluetooth ®	
Functions	RFID, Bluetooth® and QR code	
Keypad	Touch Keypad	
QR Code Scanner	Supported	
QR Code Scanning Pattern	Area image (640*480 pixel array)	
QR Code Scan Angle	Horizontal: 68°/ Vertical: 51°	
QR Code Capability	One-Dimensional Code: Code 128, Code 39, Codabar, Interleaved 2 of 5, ITF-6, ITF-14, ISBN, Code 93, UCC/EAN-128, GS1 Databar, Matrix 2 of 5, Code 11, Industrial 2 of 5, Standard 2 of 5, Plessey, MSI-Plessey Two-Dimensional Code: QR Code, Micro QR	
QR Code Scanning Performance*	Narrow Width	Depth of Field
	9mil (QR)	1.5”-2.5” (40mm-65mm)
	15mil (QR)	0.3”-4.3”(10mm-110mm)
	20mil (QR)	0.5”-4.5”(15mm-115mm)
	6mil (Code128)	1.7”-3.7”(45mm-95mm)
	9mil (Code128)	0.9”-5.1”(25mm-130mm)
	15mil (Code128)	0.9”-6.1”(25mm-155mm)
	20mil (Code128)	1.7”-5.5”(45mm-140mm)

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Communications & Panel Connection	Wiegand OSDP (v2.2) via RS-485 (Up to 128bits SCP Secure Communication)
Reading Distance	13.56MHz & 125kHz: Up to 2.3"/60 mm (depending on environment and transponder) Up to 393.7"/ 10m with a Bluetooth Smartphone (configurable distances on each reader)
Data Protection	AES128 (Secured Communication between Reader & Controller) Secure Data Storage in EAL6+ Certified Crypto Chip
Visual Indicator	RGB LEDs (Configurable By 'Armatura Connect' Mobile APP)
Audio Indicator	Internal buzzer with adjustable intensity (Configurable By 'Armatura Connect' Mobile APP)
Power Requirement / Power Supply	9 VDC to 24 VDC
Operating Temperature	-4°F - 122°F /-20°C~50°C
Dimensions	4.78" W x 1.77" H x 0.96" D (121.5 x 45 x 24.5mm)
Tamper Switch	Magnetic tamper detection system
Certifications	CE, FCC, RoHs3.0, WEEE, UL294(Coming Soon), IEC EN/ BS EN 60839 Grade 4
Mounting	Suited for mullion-mount door installations or any flat surface mounting
Protection / Resistance	Weather & Dust Proof Protection Rating compliant with IP66 Reinforced Vandal-proof Structure IK07 certified

Remarks:
**Standard version provides “Read only” function. Customization is required for “Read & Write” function.
*This product includes software developed by the OpenSSL Project for use in the OpenSSL Toolkit (http://www.openssl.org/)
QR scanning performance was tested in a laboratory environment, and the luminance was recorded as 250 Lux.

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2. ARMATURA CARD MODULE SUPPORTING LIST

ARMATURA	ARMATURA RFID Card Module Supporting List												ArmaSec-07022025
		Card Module Abbreviation	[DF]	[SFMH]	[NO]	[NP]	[NI]	[NPL]	[NIH]	[RNP]	[RNI]	[RNIB]	[RNPB]
Frequency	Classification	Compatible Readers	EP10C/ EP20C/ EP20CK/ EP20CQ/ EP20CKQ/ EP20ENC/ EP30 Series	EP10C/ EP20C/ EP20CK/ EP20CQ/ EP20CKQ/ EP20ENC/ EP30 Series/ VG10CKQ*	EP10C/ EP20ENC	EP10C/ EP20ENC	EP10C/EP20CQ/ EP20CKQ/ EP20ENC EP30 Series	EP10C	EP10C	OmniAC20/ OmniAC30/ EP20CQ*/ EP20CKQ*/ EP30 Series/ VG10CKQ*	OmniAC20/ OmniAC30/ EP20CQ*/ EP20CKQ*/ EP30 Series/ VG10CKQ*	OmniAC20/ OmniAC30	OmniAC20/ OmniAC30
13.56MHz	ISO14443A	LEGIC Advant		√	√1)	√1)	√1)		√1)				
		MIFARE Classic, Mini S50,S70	√4)	√	√	√	√		√	√4)	√4)	√4)	√4)
		MIFARE Classic EV1	√4)	√2)	√2)	√2)	√2)		√2)	√4)	√4)	√4)	√4)
		MIFARE DESFire Light		√8)	√8)	√8)	√8)		√8)	√4)	√4)	√4)	√4)
		MIFARE DESFire EV1	√4)	√	√	√	√		√	√4)	√4)	√4)	√4)
		MIFARE DESFire EV2/ EV3	√4)	√13)	√13)	√13)	√13)		√13)	√4)	√4)	√4)	√4)
		MIFARE Plus S, X		√	√	√	√		√	√4)	√4)	√4)	√4)
		MIFARE Smart MX		√3)	√3)	√3)	√3)		√3)	√4)	√4)	√4)	√4)
		MIFARE Ultralight		√	√	√	√		√	√4)	√4)	√4)	√4)
		MIFARE Ultralight C		√	√	√	√		√	√4)	√4)	√4)	√4)
		MIFARE Ultralight EV1		√2)	√2)	√2)	√2)		√2)	√4)	√4)	√4)	√4)
		NFC (NTAG2xx)	√		√	√	√		√				
		SLE44R35		√3)	√3)	√3)	√3)		√3)				
		SLE66Rxx (my-d move)		√3)	√3)	√3)	√3)		√3)				
		Topaz			√	√	√		√				
		HID iCLASS SEOS					√20)		√20)		√20)	√20)	
		NFC(HCE & NTAG2xx)		√	√	√	√		√	√	√	√	√
	ISO14443B	Calypso		√3)	√3)	√3)	√3)		√3)				
		Calypso Innovatron protocol		√3)	√3)	√3)	√3)		√3)				
		CEPAS		√3)	√3)	√3)	√3)		√3)				
		CTS			√	√	√		√10)				
		Pico Pass		√1)	√4)	√4)	√4)		√4)				
		SRI4K, SRIX4K		√	√	√	√		√				
		SRI512, SRT512			√	√	√		√				
	ISO18092/ ECMA-340	Sony FeliCa		√5)	√5)	√5)	√5)		√5)	√1)	√1)	√1)	√1)
	ISO15693	EM4x33		√3)	√3)	√3)	√3)		√3)				
		EM4x35		√3)	√3)	√3)	√3)		√3)				
		HID iCLASS		√1)	√1)	√1)	√10)		√10)	√1)	√10)	√10)	√1)
		HID iCLASS SE/ SR/ Elite		√1)	√1)	√1)	√10)		√10)	√1)	√10)	√10)	√1)
		iCODE SLI		√	√	√	√		√				
		LEGIC Advant		√1)	√1)	√1)	√1)		√1)				
		M24LR16/64		√	√	√	√		√				
		MB89R118/119			√	√	√		√				
		SRF55Vxx (my-d vicinity)		√3)	√3)	√3)	√3)		√3)				
		Tag-it		√	√	√	√		√				
		Pico Pass		√1)	√4)	√4)	√4)		√4)				
		LEGIC Prime		√									
		CPU Card											

To be released

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ARMATURA RFID Card Module Supporting List

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		Card Module Abbreviation	[DF]	[SFMH]	[NO]	[NP]	[NI]	[NPL]	[NIH]	[RNP]	[RNI]	[RNIB]	[RNPB]
Frequency	Classification	Compatible Readers	EP10C/ EP20C/ EP20CK/ EP20CQ/ EP20CKQ/ EP20ENC/ EP30 Series	EP10C/ EP20C/ EP20CK/ EP20CQ/ EP20CKQ/ EP20ENC/ EP30 Series/ VG10CKQ*	EP10C/ EP20ENC	EP10C/ EP20ENC	EP10C/EP20CQ/ EP20CKQ/ EP20ENC EP30 Series	EP10C	EP10C	OmniAC20/ OmniAC30/ EP20CQ*/ EP20CKQ*/ EP30 Series/ VG10CKQ*	OmniAC20/ OmniAC30/ EP20CQ*/ EP20CKQ*/ EP30 Series/ VG10CKQ*	OmniAC20/ OmniAC30	OmniAC20/ OmniAC30
125KHz		AWID			√	√	√	√					
		Cardax			√	√	√	√					
		CASI-RUSCO			√6)	√6)	√6)	√6)		√	√	√	√
		Deister			√6)	√6)	√6)	√6)					
		EM4100, 4102, 4200	√		√7)	√7)	√7)	√7)		√	√	√	√
		EM4050, 4150, 4450, 4550			√	√	√	√					
		EM4305			√	√	√	√					
		Ultra Prox			√	√	√	√					
		G-Prox				√6)	√6)	√6)					
		HID DuoProx II (1336)				√	√	√		√1)	√1)	√1)	√1)
		HID ISO Prox II (1386)				√	√	√		√1)	√1)	√1)	√1)
		HID Micro Prox II (1391)				√	√	√		√1)	√1)	√1)	√1)
		HID Prox III (1346)				√	√	√		√1)	√1)	√1)	√1)
		HID Prox				√	√	√		√1)	√1)	√1)	√1)
		HID Prox II (1326)				√	√	√		√1)	√1)	√1)	√1)
		HITAG 1, 2, S			√9)	√9)	√9)	√9)					
		ICT			√8)	√8)	√8)	√8)					
		IDTECK			√	√	√	√					
		Indala				√	√	√					
		ioProx				√	√						
		ISONAS			√	√	√	√					
		Keri			√	√	√	√					
		Miro			√	√	√	√					
		Nedap			√6)	√6)	√6)	√6)					
		Nexwatch				√	√	√					
		Pyramid			√	√	√	√					
		Q5			√	√	√	√					
		T5557, T5567, T5577			√	√	√	√					
		TITAN (EM4050)			√	√	√	√					
		UNIQUE			√	√	√	√					
		ZODIAC			√	√	√	√					
2.4GHz		BLE										Y*	Y*
		Globally Available		Y				Y	Y	Y	Y		
	Availability	Globally Available Except for U.S., E.U., Japan, Australia, Canada, U.K., Albania, Iceland, Liechtenstein, Monaco, North Macedonia, Norway, San Marino, Serbia, Switzerland, Turkey, and the United Kingdom	Y		Y	Y	Y						

√) UID only, customization upon request for reading encryption content
1) UID only
2) Read/ write (customisation) enhanced security features on request
3) Read/ write (customisation) in direct chip command mode
4) UID only, read/ write (customisation) on request
5) UID + read/ write (customisation) public area
6) Hash value only
7) Only emulation of 4100, 4102
8) On request
9) Without encryption
10) UID + PAC (CSN & Facility Code), read/ write(customisation) on request
11) In preparation
13) EV2/ EV3 supported as part of the EV1 downward compatibility
14) From FW V4.05
15) 134.2 kHz only
20) PAC (CSN & Facility Code), read/ write (customisation) on request

*The RNIB/ RNPB version is for devices that don't have built-in Bluetooth support. If the device already has Bluetooth Low Energy (BLE) built-in, then you don't need to use the RNIB/RNPB version.

The final interpretation of this data sheet belongs to Armatura LLC.
All information regarding the card formats supported by the RFID card modules are claimed by the provider(s) of the card modules. Armatura LLC accepts no liability.

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3. MAINTENANCE AND SUPPORT

The VG10CKQ, an all-weather outdoor multi-tech smart reader shall be supported by a comprehensive support program, which shall include the following:

- Regular software updates and security patches.
- Technical support via phone and email.
- Onsite repair services as needed.
- Spare parts availability.
- Training for system administrators and end-users.

4. DOCUMENTATION

The supplier shall provide the following documentation for the VG10CKQ, an all-weather outdoor multi-tech smart reader:

- User manual
- Installation guide
- Technical specifications
- Software release notes
- Warranty terms and conditions

5. WARRANTY AND SUPPORT

The VG10CKQ, an all-weather outdoor multi-tech smart reader shall be covered by a minimum of 36-month manufacturer's warranty that covers defects in materials and workmanship. The manufacturer shall provide remote technical support and assistance to the installer and end-user during the installation and operation of the controller.

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6. TRAINING AND DOCUMENTATION

The manufacturer shall provide the following training and documentation for the VG10CKQ, an all-weather outdoor multi-tech smart reader:

- User manuals and technical documentation for installation, configuration, and operation of the reader.
- Online training courses and videos for system administrators and operators.
- On-site or remote training sessions for system integrators and installers.
- Technical support and assistance for system integrators, installers, and end-users.

*Note: Certifications may vary by region and country. Please consult the manufacturer for specific certifications applicable to your location.

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